

Useful References for Coral and Paleoclimate Research

- Alibert, C. M., Malcolm T. Strontium/calcium ratios in modern Porites corals from the Great Barrier Reef as a proxy for sea surface temperature; calibration of the thermometer and monitoring of ENSO. *Paleoceanography* **12**, 345-363 (1997/06).
- Allan, R., Lindesay, J. & Parker, D. El Niño Southern Oscillation and climatic variability. *CSIRO, Australia*, 405 (1997).
- Allan, R. & D'Arrigo, R. Persistent ENSO sequences: how unusual was the 1990-1995 El Niño? *The Holocene, in press* (1999).
- Alley, R. B. *et al.* Holocene climate instability: a prominent, widespread event 8,200 years ago. *Geology* **25**, 483-486 (1997).
- Anderson, D. M. W., Robert S. Palaeoclimatology; ice-age tropics revisited. *Nature (London)* **367**, 23-24 (1994/01/06).
- Armstrong, A. K. M., Bernard L. Evidence of climate change in the Lower and Middle Carboniferous shallow-water carbonate rocks of Arctic Alaska, New Mexico, and Arizona. *Predictive stratigraphic analysis; concept and application*, 52-58 (1994).
- Ayliffe, L. K. G., M. K.; McCulloch, M. T.; Anker, S.; Hopley, D.; Isdale, P. J. The systematics of Sr/Ca and d₁₈O in modern and fossil corals. *AGU 1995 spring meeting* **76**, 318 (1995/11/07).
- Balmaseda, M. A., Davey, M. K. & Anderson, D. L. T. Decadal and seasonal dependence of ENSO prediction skill. *J. Climate* **8**, 2705-2715 (1995).
- Barnes, D. J. & Lough, J. M. On the nature and causes of density banding in massive coral skeletons. *J. Exp. Mar. Biol. Ecol.* **167**, 91-108 (1993).
- Barnett, T. P. *et al.* On the prediction of the El Niño of 1986-87. *Science* **241**, 192-196 (1988).
- Beck, J. W. E., R. Lawrence; Ito, Emi; Taylor, Frederick W.; Recy, Jacques; Rougerie, Francis; Joannot, Pascale; Henin, Christian. Sea-surface temperature from coral skeletal strontium/calcium ratios. *Science* **257**, 644-647 (1992/07/31).
- Beck, J. W. R., Jacques; Taylor, Fred; Edwards, R. Lawrence; Cabioch, Guy. Abrupt changes in early Holocene tropical sea surface temperature derived from coral records. *Nature (London)* **385**, 705-707 (1997/02/20).
- Betzler, C. G. K., Dick; Gartner, Stefan; Wei, Wuchang. Eocene to Miocene chronostratigraphy of the Queensland Plateau; control of climate and sea level on platform evolution. *Proceedings of the Ocean Drilling Program, scientific results, Northeast Australian Margin; covering Leg 133 of the cruises of the drilling vessel JOIDES Resolution, Apra Harbor, Guam, to Townsville, Australia, sites 811-826, 4 August-11 October 1990* **133**, 281-290 (1993/11).
- Betzler, C. B., Thomas C.; Kroon, Dick. Role of climate in partial drowning of the Queensland Plateau carbonate platform (northeastern Australia). *Marine Geology* **123**, 11-32 (1995/03).
- Betzler, C. K., Dick; Reijmer, John J. G. Synchronicity of major late Neogene sea level fluctuations and paleoceanographically controlled changes at recorded by two carbonate platforms. *Paleoceanography* **15**, 722-730 (2000/12).
- Bian, H. & Druffel, E. R. M. Monthly stable isotope records in an Australian coral and their correspondence with environmental variables. *J. Geophys. Res. Lett.* **26**, 731-734 (1999).
- Bitz, C. C. & Battisti, D. S. Interannual to decadal variability in climate and the glacier mass balance in Washington, Western Canada, and Alaska. *J. Climate, in press* (1999).
- Black, D. E., Peterson, L. C., Kashgarian, M., Overpeck, J. T. & Hughen, K. A. Variability in the ITCZ and trade winds over the southern Caribbean for the last 800 years and during the Bolling-Allerod/Younger Dryas transition, EOS: Trans. Am. Geophys. Union **79**, F309 (1996).
- Blanchon, P. S., John. Reef drowning during the last deglaciation; evidence for catastrophic sea-level rise and ice-sheet collapse. *Geology (Boulder)* **23**, 4-8 (1995/01).
- Brachert, T. C. B., Christian G.; Davies, P. J.; Feary, David A. Climatic change; control of carbonate platform development (Eocene-Miocene, Leg 133, northeastern Australia). *Proceedings of the Ocean Drilling Program, scientific results, Northeast Australian Margin; covering Leg 133 of the cruises of the drilling vessel JOIDES Resolution, Apra Harbor, Guam, to Townsville, Australia, sites 811-826, 4 August-11 October 1990* **133**, 291-300 (1993/11).
- Bradley, R. S., Briffa, K., Cole, J. & Hughes, M. "Climate of the last millennium," chapter in preparation for PAGES Synthesis volume, edited by K. Alverson, T. Pedersen, and R. Bradley. .

- Budd, A. F. J., Kenneth G.; Stemann, Thomas A. Faunal turnover in Neogene to Recent Caribbean reef corals and regional environmental change. *Geological Society of America, North-Central Section, 27th annual meeting* **25**, 9-10 (1993/03).
- Bush, A. B. G. Assessing the impact of mid-Holocene insolation on the atmosphere-ocean system. . *J. Geophys. Res. Lett.* **26**, 99-102 (1999).
- Cadet, D. Meteorology of the Indian summer monsoon. *Nature* **279**, 761-767 (1979).
- Cadet, D. & Reverdin, G. Water vapour transport over the Indian Ocean during summer 1975. *Tellus* **33**, 476-487 (1981).
- Cane, M. A. *et al.* Twentieth-century sea surface temperature trends. *Science* **275**, 957-960 (1997).
- Carriquiry, J. D., Risk, M. J. & Schwarcz, H. P. Stable isotope geochemistry of corals from Costa Rica as proxy indicator of El Niño (ENSO), *Geochim. Cosmochim. Acta.* **58**, 335-351 (1994).
- Chakraborty, S. & Ramesh, R. Climatic significance of d₁₈O and d₁₃C variations in a banded coral (Porites) from Kavaratti, Lakshadweep Islands, In: Desai, B.N. (ed.), *Oceanography of the Indian Ocean*, Oxford & IBH, New Delhi, India. , 473-478. (1992).
- Chang, P., Ji, L. & Li, H. A decadal climate variation in the tropical Atlantic Ocean from thermodynamic air-sea interactions. *Nature* **385**, 516-518 (1997).
- Chang, P., Ji, L., Li, H., Penland, C. & Matrosova, L. Prediction of tropical Atlantic sea surface temperature. *J. Geophys. Res. Lett.* **25**, 1193-1196 (1998).
- Chao, Y., Ghil, M. & McWilliams, J. C. Pacific Interdecadal Variability in This Century's Sea Surface Temperatures. . *J. Geophys. Res. Lett.* **27**, 2261-4 (2000).
- Chappell, J. & Yoshida, Y. Upper Quaternary sea levels, coral terraces, oxygen isotopes and deep-sea temperatures. *Quaternary environmental changes in the Pacific region* **103**, 828-840 (1994).
- Charles, C. D., Hunter, D. E. & Fairbanks, R. G. Interaction between the ENSO and the Asian monsoon in a coral record of tropical climate. . *Science* **277**, 925-928 (1997).
- Chen, D., Zebiak, S. E., Busalacchi, A. J. & Cane, M. A. An improved procedure for El Niño forecasting: Implications for predictability. *Science* **269**, 1699-1702 (1995).
- Chevrot, P. M., C.; Thomassin, B. A. Sclerochronologie de Porites lutea (Scleractinaire hermatypique) a Mayotte (SW ocean Indien); nouvelle approche par l'analyse en composantes principales dans le domaine des fréquences. *Sclerochronology of Porites lutea (hermatypic Scleractinia) of Mayotte Island, southwestern Indian Ocean; a new approach by frequency domain principal components analysis* **318**, 803-808 (1994).
- Clement, A. C., Seager, R. & Cane, M. A. Orbital controls on the El Niño/Southern Oscillation and the tropical climate. . *Paleoceanography* **14**, 441-456 (1999).
- Cole, J. E. S., Glen T.; Fairbanks, Richard G. Tropical climate dynamics of the past century recorded in the geochemistry of long-lived corals. *Geological Society of America, 1991 annual meeting* **23**, 106 (1991).
- Cole, J. Reconstructing & predicting climate variability. *Geotimes* **39**, 12-15 (1994/11).
- Cole, J. Coral records of climate change; understanding past variability in the tropical ocean-atmosphere. *Climatic variations and forcing mechanisms of the last 2000 years* **41**, 331-353 (1996).
- Cole, J. E. & Fairbanks, R. G. The Southern Oscillation recorded in the oxygen isotopes of corals from Tarawa Atoll. *Paleoceanography* **5**, 669-683 (1990).
- Cole, J. E. Interannual-decadal variability in tropical climate systems: stable isotope records and general circulation model experiments, Ph.D. thesis, Columbia Univ., , 302 (1992).
- Cole, J. E. Coral records of climate change: Understanding past variability in the tropical ocean-atmosphere, in *Climatic variations and forcing mechanisms over the last 2000 Years*, P.D. Jones, R.S. Bradley, and J. Jouzel. (editors), Springer-Verlag, New York. , 331-354 (1996).
- Cole, J. E. The changing pulse of warm pool variability during the past 220 years: New oxygen isotopic results from a Gulf of Papua coral, EOS: Trans. Am. . *Geophys. Union* **79**, F493 (1998).
- Cole, J. E. & Cook, E. R. Decadal changes in the relationship between El Niño/Southern Oscillation variability and moisture balance in the continental United States. . *J. Geophys. Res. Lett.* **25**, 4529-4532 (1998).
- Cole, J. E., Dunbar, R. B., McClanahan, T. R. & Muthiga, N. A. Tropical Pacific forcing of decadal SST variability in the western Indian Ocean over the past two centuries. *Science* **287**, 617-619 (2000).
- Colgan, C. Archives reveal climate history. *Explorations (La Jolla, CA)* **4**, 19-22, 24-25 (1997).
- Collins, L. B. Z., Z. R.; Wyrwoll, K. H.; Hatcher, B. G.; Playford, P. E.; Eisenhauer, A.; Chen, J. H.;

- Wasserburg, G. J.; Bonani, G. Holocene growth history of a reef complex on a cool-water carbonate margin; Easter Group of the Houtman Abrolhos, eastern Indian Ocean. *Marine Geology* **115**, 29-46 (1993/11).
- Cook, E. R. Temperature histories from tree rings and corals. *Climate Dynamics* **11**, 211-222 (1995/05).
- Cook, E. R. & Kairiukstis, L. Methods of dendrochronology: applications in the environmental sciences. *Kluwer, Dordrecht*, 408 (1991).
- Cook, E. R. Temperature histories from tree-rings and corals. *Climate Dynamics* **11**, 211-222 (1995).
- Cook, E. R., Meko, D. M., Stahle, D. W. & Cleaveland, M. K. Drought reconstructions for the continental United States. *J. Climate* **12**, 1145-1162 (1999).
- Correge, T. et al. Evidence for stronger El Niño-Southern Oscillation (ENSO) events in a mid-Holocene massive coral. *Paleoceanography* **15**, 465-470 (2000).
- Crowley, T. J. Q., T. M.; Taylor, F. W. & Anonymous. Volcanic signal detected in New Caledonia coral record. *AGU 1995 spring meeting* **76**, 323 (1995/11/07).
- Crowley, T. J., Quinn, T. M. & Taylor, F. W. Evidence for a volcanic cooling signal in a 335 year coral record from New Caledonia. *Paleoceanography* **12**, 633-639 (1997).
- Curtis, S. & Hastenrath, S. Forcing of anomalous sea surface temperature evolution in the tropical Atlantic during Pacific warm events . *J. Geophys. Res.* **100**, **15**, 835-15,847 (1995).
- D'Arrigo, R. D., Jacoby, G. C. & Krusic, P. J. Progress in dendroclimatic studies in Indonesia. *Terr. Atmos. Oceanic Sci.* **5**, 349-363 (1994).
- D.W., K., Buddemeier, R. W. & Smith, S. V. Coral chronologies: seasonal growth bands in reef corals. *Science* **177**, 270-272 (1972).
- Davydov, V. I. D., L. A. Paleotemperaturnyy analiz kal'tsiy-magniyevykh otnosheniy verkhnepaleozoyskikh biogennykh Karbonatov Podmoskov'ya i Donbassa. *Paleotemperature analysis of calcium-magnesium ratios in upper Paleozoic biogenic carbonates of the Moscow region and Donets Basin* **66**, 101-109 (1991/08).
- de Villiers, S. N., Bruce K.; Chivas, Allan R. Biological controls on coral Sr/Ca and delta (super 18) O reconstructions of sea surface temperatures. *Science* **269**, 1247-1249 (1995/09/01).
- de Villiers, S., Nelson, B. K. & Chivas, A. R. Biological controls on coral Sr/Ca and d18O reconstructions of sea surface temperatures. *Science* **269**, 1247-1249 (1995).
- Deping, W. G. Y. J. G. X. Y. F. C. Y. L. Paleoclimate implication of oxygen and carbon isotopic composition from diagenesis coral ; discussion on the data from NY-1 core. *Science in China. Series D, Earth Sciences* **41**, 609-615 (1998/12).
- Diaz, H. F. & Graham, N. E. Recent changes in tropical freezing heights and the role of sea surface temperature. *Nature* **383**, 152-155 (1996).
- Dodge, R. E. & Thomson, J. The natural radiochemical and growth records in contemporary hermatypic corals from the Atlantic and Caribbean. *Earth Planet. Sci. Lett.* **23**, 313-322 (1974).
- Dodge, R. E. et al. Skeletal structural basis of density banding in the reef coral Montastrea annularis. *Proc. 7th Coral Reef Symposium*, 186-195 (1994).
- Douglas, A. V. & Englehart, P. J. Variability of the summer monsoon in Mexico and relationships with drought in the United States. *Proc. 21st Annual Climate Diagnostics Workshop, Huntsville, AL, Climate Prediction Center*, 296-299 (1996).
- Druffel, E. R. M. G., S. & Anonymous. Decade time-scale variability in isotope ratios during the Little Ice Age as observed in surface corals. *AGU 1992 ocean sciences meeting* **72**, 71 (1991/12/17).
- Druffel, E. M. Radiocarbon in annual coral rings from the eastern tropical Pacific Ocean. *J. Geophys. Res. Lett.* **8**, 59-62 (1981).
- Druffel, E. R. M. Detection of El Niño and decade time scale variations of sea surface temperature from banded coral records: implications for the carbon dioxide cycle, in The Carbon Cycle and Atmospheric CO₂: Natural Variations Archean to Present, W.S. Broecker and E.T. Sundquist (editors), American . *Geophysical Union, Washington DC*, 111-122 (1985).
- Druffel, E. R. M. Decade time scale variability of ventilation in the north Atlantic: high-precision measurements of bomb radiocarbon in banded corals. *J. Geophys. Res.* **94**, 3271-3285 (1989).
- Druffel, E. R. M. & Griffin, S. Large variations of surface ocean radiocarbon: evidence of circulation changes in the southwestern Pacific. *J. Geophys. Res.* **98**, **20**,249-20, 259 (1993).
- Druffel, E. R. M. Pulses of rapid ventilation in the North Atlantic surface ocean during the past century. *Science* **275**, 1454-1457 (1997).
- Dunbar, R. B. W., Gerard M.; Colgan, Mitchell W.; Glynn, Peter W. Eastern Pacific sea surface

- temperature since 1600 A.D.; the delta ^(super 18)O record of climate variability in Galapagos corals. *Paleoceanography* **9**, 291-315 (1994/04).
- Dustan, P., Jaap, W. & Halas, J. The distribution of the class Sclerospongia. *Lethaia* **9**, 419-420 (1976).
- E.R.M., D. Banded corals: Changes in oceanic ¹⁴C levels during the Little Ice Age. *Science* **218**, 13-19 (1982).
- Ebbesmeyer, C. C. et al. 1976 step in Pacific climate: Forty environmental changes between 1968-1975 and 1977-1984, In: . *Proc. 7th Annual Pacific Climate (PACLIM) Workshop, April, 1990, California Department of Water Resources, J.L. Betancourt and V.L. Tharp (editors), Interagency Ecological Study Program Technical Report* **26**, 115-126 (1991).
- Edwards, R. L. B., J. Warren; Burr, G. S.; Donahue, D. J.; Chappell, J. M. A.; Bloom, A. L.; Druffel, E. R. M.; Taylor, F. W. A large drop in atmospheric ^(super 14)C/ ^(super 12)C and reduced melting in the Younger Dryas, documented with ^(super 230)Th ages of corals. *Science* **260**, 962-968 (1993/05/14).
- El-Asmar, H. M. Quaternary isotope stratigraphy and paleoclimate of coral reef terraces, Gulf of Aqaba, South Sinai, Egypt. *Quaternary Science Reviews* **16**, 911-924 (1997).
- Enfield, D. B. & Mayer, D. A. Tropical Atlantic sea surface temperature variability and its relation to El Nino-Southern Oscillation. *J. Geophys. Res.* **102**, 929-945 (1997).
- Fairbanks, R. G. & Dodge, R. E. Annual periodicity of the O-18/O-16 and C-13/C-12 ratios in the coral Montastrea annularis. *Geochim. Cosmochim. Acta* **43**, 1009-1020 (1979).
- Fairbanks, R. G. et al. Evaluating climate indices and their geochemical proxies measured in corals. *Coral Reefs* **16**, S93-S100 (1997).
- Fallon, S. C., Richard; Ciccarelli, Annette; Cabrera, Andrea; Chomicz, Leslie; Zarwell, Lucas; Hill, Victoria; Gutierrez, Antonette. Fijian past climate recorded in tree rings and coral banding. *Geological Society of America, 1993 annual meeting* **25**, 331 (1993/10).
- Fallon, S. J. M., McCulloch, M. T., Woesik, R. v. & Sinclair, D. J. Corals at their latitudinal limits: laser ablation trace element systematics in Porites from Shirigai Bay, Japan. *Earth Planet. Sci. Lett* **172**, 221-238 (1999).
- Fisher, D. A., Koemer, R. M. & Reeh, N. Holocene climatic records from Agassiz ice cap, Ellesmere Island, NWT, Canada. *The Holocene* **5**, 19-24 (1995).
- Flohn, H., Kapala, A., Knoche, H.-R. & Machel, H. Recent changes of the tropical water and energy budget and of midlatitude circulations. *Climate Dynamics* **4**, 237-252 (1990).
- Folland, C. K., Palmer, T. N. & Parker, D. E. Sahel rainfall and worldwide sea temperatures, 1900-85. *Nature* **320**, 602-607 (1986).
- Fritts, H. C. Tree Rings and Climate. *Academic Press, London*, 567 (1976).
- Gagan, M. K. C., A. R.; Isdale, P. J. Coral-based isotopic records of the Australian monsoon and Indonesian throughflow. *Climates of the past, third field meeting*, 16-18 (1994).
- Gagan, M. K. A., L. K.; McCulloch, M. T.; Gagan, Michael; Anker, S.; Hopley, D.; Isdale, P. J. Sr/Ca and delta-O18 in Great Barrier Reef corals and ENSO dynamics at 5 ka BP. *AGU 1995 spring meeting* **76**, 316-317 (1995/11/07).
- Gagan, M. K. A., L. K.; Beck, J. W.; Cole, Julia E.; Druffel, E. R. M.; Dunbar, Robert B.; Schrag, D. P. New views of tropical paleoclimates from corals. *Past global changes and their significance for the future* **19**, 45-64 (2000/01).
- Gagan, M. K., Chivas, A. R. & Isdale, P. J. High-resolution isotopic records from corals using ocean temperature and mass spawning chronometers. *Earth Planet. Sci. Lett* **121**, 549-558 (1994).
- Gagan, M. K., Chivas, A. R. & Isdale, P. J. Timing coral-based climatic histories using ¹³C enrichments driven by synchronized spawning. *Geology* **24**, 1009-1012 (1996).
- Gaillardet, J. & Allegre, C. J. Boron isotopic compositions of corals: seawater or diagenesis record? *Earth Planet. Sci. Lett* **136**, 665-676 (1995).
- Gascoyne, M. H., R. S. Palaeoclimatology and palaeosea levels. *Uranium-series disequilibrium; applications to Earth, marine, and environmental sciences*, 553-582 (1992).
- Gershunov, A. & Barnett, T. P. Interdecadal modulation of ENSO teleconnections. *Bull. Am. Met. Soc.* **79**, 2715-2726 (1998).
- Gill, I. O., Jennifer J.; Hubbard, Dennis K. Corals, paleotemperature, and the aragonite-calcite inversion. *Geological Society of America, 1994 annual meeting* **26**, 422 (1994).
- Gill, I. O., Jennifer J.; Hubbard, Dennis K. Corals, paleotemperature records, and the aragonite-calcite transformation. *Geology (Boulder)* **23**, 333-336 (1995/04).

- Goreau, T. F. The ecology of Jamaican reefs. I. Species composition and zonation. *Ecology* **40**, 67-90 (1959).
- Graham, N. E. Decadal-scale climate variability in the tropical and North Pacific during the 1970s and 1980s: observations and model results. *Climate Dynamics* **10**, 135-162 (1994).
- Graham, N. E. Simulation of recent global temperature trends. *Science* **267**, 686-671 (1995).
- Greer, L. S., Peter K.; Dodge, Richard E. A comparison of modern and Holocene coral growth rates from the Dominican Republic. *Geological Society of America, 28th annual meeting* **28**, 361 (1996).
- Grottoli-Everett, A. & Wellington, G. Effect of light and zooplankton on skeletal $\delta^{13}\text{C}$ values in the eastern Pacific corals Pavona clavus and Pavona gigantea. *Coral Reefs, in press* (1999).
- Gu, D. & Philander, S. G. H. Interdecadal climate fluctuations that depend on exchanges between the tropics and extratropics. *Science* **275**, 805-807 (1997).
- Guilderson, T. P. & Schrag, D. P. Abrupt Shift in Subsurface Temperatures in the Tropical Pacific Associated with Changes in El Niño. *Science* **281**, 240-243 (1998).
- Guilderson, T. P., Schrag, D. P., Kashgarian, M. & Southon, J. Radiocarbon variability in the western equatorial Pacific inferred from a high-resolution coral record from Nauru Island. *J. Geophys. Res.* **103**, 24,641-24,650 (1998).
- Guilderson, T. P. & Schrag, D. P. Reliability of coral records from the western Pacific warm pool. *Paleoceanography, in press*. (1999).
- Guzman, H. & Tudhope, A. W. Seasonal variation in skeletal extension rate and stable isotopic ($\delta^{13}\text{C}/\delta^{12}\text{C}$ and $\delta^{18}\text{O}/\delta^{16}\text{O}$) composition in response to several environmental variables in the Caribbean reef coral Siderastrea siderea. *Mar. Ecol. Prog. Ser.* **166**, 109-121 (1998).
- Halley, R. B. Coral fluorescence as an index of runoff in South Florida. *Proceedings of the U.S. Geological Survey global change research forum, Herndon, Virginia, March 18-20, 1991*, 86 (1993).
- Harris, P. T. A., O.; Coleman, R. Estimating sediment mobility due to swell waves and tides on Australia's continental shelf
- Geoscience for the new millennium; abstracts. *Abstracts - Geological Society of Australia* **49**, 202 (1998).
- Hart, S. R. & Cohen, A. L. An ion probe study of annual cycles of Sr/Ca and other trace elements in corals. *Geochim. Cosmochim. Acta* **60**, 3075-3084 (1996).
- Hasenhuettl, C. H., Berhard. Devonian shallow marine environments of the Graz Palaeozoic affected by rifting. *Proceedings of the Second European regional meeting; Coral reefs in the past, present and future* **29**, 52-54 (1995).
- Hastenrath, S. & Heller, L. Dynamics of climatic hazards in northeast Brazil. *Quart. J. Royal Met. Soc.* **103**, 77-92 (1977).
- Hastenrath, S. & Lamb, P. J. Some aspects of circulation and climate over the eastern equatorial Atlantic. *Mon. Weather Rev.* **106**, 1280-1287 (1983).
- Hastenrath, S., Castro, L. & Aceituno, P. The Southern Oscillation in the tropical Atlantic Sector. *Contrib. Atmos. Physics* **60**, 447-463 (1987).
- Hastenrath, S. Decadal-scale changes of the circulation in the tropical Atlantic sector associated with Sahel drought. *Int. J. Climatology* **10**, 459-472 (1990).
- Hastenrath, S. & Kruss, P. D. The dramatic retreat of Mount Kenya's glaciers 1963-87: greenhouse forcing. *Ann. Glaciol.* **16**, 127-133 (1992).
- Hastenrath, S. & Greischar, L. Circulation mechanisms related to Northeast Brazil rainfall anomalies. *J. Geophys. Res.* **98**, 5093-5102 (1993).
- Hastenrath, S., Nicklis, A. & Greischar, L. Atmospheric-hydrospheric mechanisms of climate anomalies in the western equatorial Indian Ocean. *J. Geophys. Res.* **98**, 20, 219-20, 235 (1993).
- Hecht, A. D. *Paleoclimate analysis and modeling* (Wiley, New York, 1985).
- Heikoop, J. M. R., Michael J. Stable isotopic signatures of ENSO variability recorded in eastern Indonesian corals. *Geological Association of Canada; Mineralogical Association of Canada; annual meeting; program with abstracts--Association Géologique du Canada; Association Mineralogique du Canada; reunion annuelle; programme et résumés* **19**, 49 (1994).
- Heiss, G. A. D., W. C.; Reijmer, John J. G. A 200 year sclerochronological record from the Red Sea; growth rates, stable isotopes and environmental stress. *Geological Society of America, 1993 annual meeting* **25**, 161 (1993/10).

- Hemming, N. G., Reeder, R. J. & Hanson, G. N. Mineral-fluid and isotopic fractionation of boron in synthetic calcium carbonate. *Geochim. Cosmochim. Acta* **59**, 371-379 (1995).
- Hemming, N. G., Guilderson, T. P. & Fairbanks, R. G. Seasonal variations in the boron isotopic composition of coral: A productivity signal? *Global Biogeochem. Cycles* **12**, 581-586 (1998).
- Hilderbrand, D. C. Elemental ratio determination via ICP-MS and DCP-AES; methodology to extract climate records from coral aragonite. (1998/05).
- Hornbrook, N. d. B. New Zealand Cenozoic marine paleoclimates; a review based on the distribution of some shallow water and terrestrial biota. *Pacific Neogene; environment, evolution, and events*, 83-106 (1992).
- Houghton, R. W. & Tourre, Y. Characteristics of low-frequency sea surface temperature fluctuations in the tropical Atlantic. *J. Climate* **5**, 765-771 (1992).
- Houston, R. E. D., Robert B. Paleoclimatic records from Cocos Island corals ; high resolution records using coupled oxygen isotopes and U/Ca thermometry. *AGU 1995 fall meeting* **76**, 327 (1995/11/01).
- Hubbard, D. K. G., Ivan P.; Rubenstein, James; Fairbanks, Richard G. Paleoclimate and paleoceanographic controls of shelf-edge reef development in Puerto Rico and the Virgin Islands. *Geological Society of America, 28th annual meeting* **28**, 489 (1996).
- Hughen, K. A. O., Jonathan T.; Lehman, Scott J.; Kashgarian, Michaele; Southon, John R.; Peterson, Larry C. in *Proceedings of the 16th international radiocarbon conference; Part 1* (ed. Mook, W. G. v. d. P., Johannes) 483-494 (University of Arizona, Department of Geosciences, Tucson, AZ, United States, Groningen, Netherlands, , 1998).
- Hughen, K. A., Overpeck, J. T., Peterson, L. C. & Trumbore, S. Abrupt deglacial climatic change in the tropical Atlantic. *Nature* **380**, 51-54 (1996).
- Insalaco, E. Growth banding in two Jurassic corals; regional and local variations. *Proceedings of the Second European regional meeting; Coral reefs in the past, present and future* **29**, 154 (1995).
- Insalaco, E. The use of Late Jurassic coral growth bands as palaeoenvironmental indicators. *Palaeontology* **39**, Part 2, 413-431 (1996/07).
- Isdale, P. J. S., B. J.; Tickle, K. S.; Lough, J. M. Palaeohydrological variation in a tropical river catchment; a reconstruction using fluorescent bands in corals of the Great Barrier Reef, Australia. *The Holocene* **8**, 1-8 (1998).
- Isdale, P. Fluorescent bands in massive corals record centuries of coastal rainfall. *Nature* **310**, 578-9 (1984).
- Isdale, P. J., Stewart, B. J. & Lough, J. M. Palaeohydrological variation in a tropical river catchment: a reconstruction using fluorescent bands in corals of the Great Barrier Reef, Australia. *The Holocene* **8**, 1-8 (1998).
- Isern, A. R. M., J. A.; Feary, D. A. The role of sea-surface temperature as a control on carbonate platform development in the western Coral Sea. *Palaeogeography, Palaeoclimatology, Palaeoecology* **124**, 247-272 (1996/09).
- J., B., Sardeshmukh, P. & Zhang, S. Identifying the most sensitive areas of tropical SST forcing for midlatitude seasonal prediction. *7th Conference on Climate Variations, Long Beach, CA, 2-7 Feb 1996* (1996).
- J.D., C., Soto-Castro, J. F., Charles, C. D. & Moore, M. Stable isotope records and trace element records in coral growth bands as tracers of ENSO activity in the Mexican Pacific. *Proc. Am. Quat. Assoc.*, 12-13 (1998).
- J.M., L., Barnes, D. J. & Taylor, R. B. The potential of massive corals for the study of high resolution climate variation of the past millennium, in Climatic fluctuations and forcing mechanisms of the last 2000 years, Jones, P.D., R.S. Bradley, and J. Jouzel (editors), Springer-Verlag, Berlin. , 355-372 (1996).
- Jones, P. Palaeoclimatology; a la recherche du temps perdu. *Nature (London)* **381**, 375-376 (1996/05/30).
- Kaplan, A. et al. Analyses of global sea surface temperature 1856-1991. *J. Geophys. Res.* **103**, 18,567-18, 589 (1998a).
- Kaplan, A., Evans, M., Cane, M. A. & R.Villalba. Globality and optimality in SST field reconstructions from tree rings: ENSO and more, extended abstract for Pole-Equator-Pole Paleoclimate of Americas (PEP1) Conference, Merida, Venezuela, March 16-20, 1998, on line at

- http://rainbow.ldeo.columbia.edu/~alexeyk/work/. (1998b).
- Kawamura, K. M., H.; Kato, M. & Beauchamp, B. E., Aston. Late Permian coral reef in eastern Tethys; implications for Permian climato-oceanography and reef evolution. *Carboniferous to Jurassic Pangea, first international symposium; program and abstracts*, 158 (1993/08).
- Kawamura, T. M., Hideaki. A Late Permian coral reef complex, South Kitakami Terrane, Japan. *West Pacific and Asian carbonates* **99**, 135-150 (1995/11).
- Kawamura, R. A rotated EOF analysis of global sea surface temperature variability with interannual and interdecadal scales. *J. Phys. Oceanog.* **24**, 707-715 (1994).
- Kayanne, H. & Yoshida, Y. Response of coral reefs to future global changes; prediction based on Holocene records. *Quaternary environmental changes in the Pacific region* **103**, 861-866 (1994).
- Kayser, R. A. Q., T. M. An investigation of climatic and environmental change during the middle Pliocene in Southwest Florida using the elemental geochemistry of a pristine fossil coral. *Linked Earth systems; congress program and abstracts; Vol. 1*, 74 (1995).
- Keating, B. H. *Seamounts, islands, and atolls* (American Geophysical Union, Washington, D.C., 1987).
- Keigwin, L. D. The little ice age and medieval warm periods in the Sargasso Sea. *Science* **274**, 1504-1508 (1996).
- Keller, N. B. Pleistocene coral communities on seamounts of the Tyrrhenian Sea. *Oceanology* **31**, 757-760 (1992/06).
- Kiessling, W. Paleoclimatic significance of Phanerozoic reefs. *Geology (Boulder)* **29**
- <http://www.gsajournals.org/gsaonline/?request=get-abstract&issn=0091-7613&volume=029&issue=08&page=0751>, 751-754 (2001/08).
- Kindler, P. D., E.; Mangini, A. New climatic, tectonic and eustatic data from the late Pleistocene marine terraces of western Cyprus. *Linked Earth systems; congress program and abstracts; Vol. 1*, 76 (1995).
- Klein, R. T., A. W.; Chilcott, C. P.; Paetzold, J.; Abdulkarim, Z.; Fine, M.; Fallick, A. E.; Loya, Y. Evaluating southern Red Sea corals as a proxy record for the Asian monsoon. *Earth and Planetary Science Letters* **148**, 381-394 ().
- Knowlton, N. W., Ernesto; Weigt, Lee A.; Guzman, Hector M. Sibling species in Montastraea annularis, coral bleaching, and the coral climate record. *Science* **255**, 330-333 (1992/01/17).
- Kramer, P. A. L., J.; Swart, P. K.; Hudson, J. H. A 100 year climatic reconstruction of Florida Bay waters based on C and O isotopic analysis of a coral skeleton. *Geological Society of America, 1991 annual meeting* **23**, 105 (1991).
- Kumar, A. & Hoerling, M. P. Interpretations and implications of the observed inter-El Niño variability. *J. Climate* **10**, 83-91 (1997).
- Kuznetsov, V. G. Evolution and cyclicity of reef formation in Russia and in adjacent countries. *Lithology and Mineral Resources* **31**, 101-111 (1996/04).
- L.G., T. Ice core evidence for climate change in the tropics: implications for our future. *Quat. Sci. Rev., in press* (1999).
- Lajoie, K. R. P., D. J.; Powell, C. L., II; Mathieson, S. A.; Sarna-Wojcicki, Andrei M. Emergent marine strandlines and associated sediments, coastal California; a record of Quaternary sea-level fluctuations, vertical tectonic movements, climatic changes, and coastal processes. *The regressive Pleistocene shoreline; coastal Southern California* **20**, 81-104 (1992).
- Lamb, P. J. & Peppler, R. A. Further case studies of tropical Atlantic surface atmospheric and oceanic patterns associated with sub-Saharan drought. *J. Climate* **5**, 476-488 (1992).
- Lamb, H. F. et al. Relation between century-scale Holocene intervals in tropical and temperate zones. *Nature* **373**, 134-137 (1995).
- Latif, M. et al. A review of the predictability and prediction of ENSO. *J. Geophys. Res.* **103**, 14,375-14,394 (1998).
- Le, J. T., R. C.; Shackleton, N. J. Sea surface temperature estimates for the western Equatorial Pacific during the late Pleistocene. *AGU 1995 spring meeting* **76**, 180 (1995/04/25).
- Lea, D. W. Barium in coral bands and foraminifera shells; a new tracer of ocean and climate change. *1991 California paleontology conference; abstracts* **13**, 5-6 (1991).
- Linn, L. J., Delaney, M. J. & Druffel, E. R. M. Trace metals in contemporary and seventeenth century Galápagos coral: records of seasonal and annual variations. *Geochim. Cosmochim. Acta* **54**, 387-394 (1990).

- Liu, Z., Kutzbach, J. & Wu, L. Modeling Climate Shift of El Niño Variability in the Holocene. . *J. Geophys. Res. Lett.* **27**, 2265-8 (2000).
- Lough, J. M. B., David J.; Taylor, Ray B. The potential of massive corals for the study of high-resolution climate variation in the past millennium
- Climatic variations and forcing mechanisms of the last 2000 years. *NATO ASI Series. Series I: Global Environmental Change* **41**, 355-371 (1996).
- Lundberg, J. T., Marguerite A. Substage 5A coral reefs, SE Florida Shelf; sea level, high precision dating and assessment of forcing mechanisms. *AMQUA 1996; program and abstracts of the 14th biennial meeting; Global warming; interglacials, interstadials, climatic optima, and other events* **14**, 103 (1996/05).
- Lynas, B. The beating heart of Earth's climate revealed; caves, coral reefs and coastlines in the Balearic Islands. *Geology Today* **10**, 145-151 (1994/08).
- M., B. et al. Atmospheric and oceanic evidences of El Niño-Southern Oscillation events in the south-central Pacific Ocean from coral stable isotopic records over the last 137 years. *Paleoceanography* **13**, 671-686 (1998).
- Mallinson, D. J. H., Albert C.; Locker, Stanley D. Paleocirculation and paleoclimatic implications of the Florida Middle Ground reefs. *Geological Society of America, 28th annual meeting* **28**, 118 (1996).
- Mantua, N. J., Hare, S. R., Zhang, Y., Wallace, J. M. & Francis, R. C. A Pacific interdecadal climate oscillation with impacts on salmon production. *Bull. Amer. Meteorol. Soc.* **78**, 1069-1079 (1997).
- Markgraf, V. et al. Paleoclimate Reconstruction along the Pole-Equator-Pole Transect of the Americas (PEP 1), Quaternary . *Science Reviews* **19**, 125-140 (2000).
- McCulloch, M. T. E., T.; Mortimer, G.; Xianhua, L.; Chivas, A.; Pillans, B.; Chappell, J. High resolution windows into Holocene-Pleistocene climate; Sr/Ca coral records of sea surface temperature from the Huon Peninsula, New Guinea. *AGU 1994 fall meeting* **75**, 333 (1994/11/01).
- McCulloch, M. M., Graham; Esat, Tezer; Li Xianhua; Pillans, Brad; Chappell, John. High resolution windows into early Holocene climate; Sr/Ca coral records from the Huon Peninsula. *Earth and Planetary Science Letters* **138**, 169-178 (1996/02).
- McCulloch, M. T., Gagan, M. K., Mortimer, G. E., Chivas, A. R. & Isdale, P. J. A high resolution Sr/Ca and d18O coral record from the Great Barrier Reef, Australia, and the 1982-1983 El Niño. *Geochim. Cosmochim. Acta* **58**, 2747-2754 (1994).
- McGlone, M. S., Kershaw, A. P. & Markgraf, V. El Niño/Southern Oscillation and climatic variability in Australasian and South American paleoenvironmental records, In: El Niño: Historical and paleoclimatic aspects of the Southern Oscillation, H.F. Diaz and V. Markgraf (editors), Cambridge University Press, Cambridge. , 435-462 (1992).
- Meehl, G. A. & Branstator, G. W. Coupled climate model simulation of El Niño/Southern Oscillation: implications for paleoclimate, in El Niño: Historical and paleoclimatic aspects of the Southern Oscillation, H.F. Diaz and V. Markgraf (editors), Cambridge University Press, Cambridge. , 69-91 (1992).
- Members, C. The surface of the ice-age earth. *Science* **191**, 1131-1137 (1976).
- Min, R. G. et al. Annual cycles of U/Ca in coral skeletons and U/Ca thermometry. *Geochim. Cosmochim. Acta* **59**, 2025-2042 (1995).
- Minobe, S. A 50-70 year climatic oscillation over the North Pacific and North America. . *J. Geophys. Res. Lett.* **24**, 683-686 (1997).
- Minobe, S. Resonance in bidecadal and pentadecadal climate oscillations over the North Pacific: Role in climatic regime shifts. . *J. Geophys. Res. Lett.* **26**, 855-858 (1999).
- Mitchell, J. F. B., Manabe, S., Meleshko, V. & Tokioka, T. Equilibrium climate change - and its implications for the future, in Climate Change: The IPCC Assessment, J.T. Houghton, G.J. Jenkins, and J.J. Ephraums (editors) Cambridge University Press, Cambridge. , 131-172 (1990).
- Mitsuguchi, T. M., Eiji; Abe, Osamu; Uchida, Tetsuo; Isdale, Peter J. Mg/Ca thermometry in coral skeletons. *Science* **274**, 961-963 (1996/11/08).
- Mitsuguchi, T., Matsumoto, E., Abe, O., Uchida, T. & Isdale, P. J. Mg/Ca thermometry in coral skeletons. *Science* **274**, 961-963 (1996).
- Mo, K. C. & Higgins, R. W. Tropical convection and precipitation regimes in the western United States. *J. Climate* **11**, 2404-2423 (1998).

- Moore, M. D. C., C. D. & Anonymous. Reconstructions of the Southern Oscillation and secular climate change from stable isotope measurements of long-lived corals (Porites) and sclerosponges (Astrosclera) from the Indonesian Seaway. *AGU 1995 spring meeting* **76**, 323 (1995/11/07).
- Moore, M. D. C., C. D.; Rubenstone, J. L. Stable isotope records of tropical Pacific climate variability from U/Th-dated sclerosponges. *Eos, Transactions, American Geophysical Union* **77**, 291 (1996/11/12).
- Moore, M. D. Proxy records of the Indonesian Low and the El Niño-Southern Oscillation from stable isotope measurements of reef corals, unpublished Ph.D. dissertation, University of California at Berkeley. (1995).
- Moore, M. D., Schrag, D. P. & Kashgarian, M. Coral radiocarbon constraints on the source of the Indonesian throughflow. *J. Geophys. Res.* **102**, 12,359-12, 366 (1997).
- Moura, A. & Shukla, J. On the dynamics of droughts in northeast Brazil: observations, theory and numerical experiments with a general circulation model. *J. Atmos. Sci.* **38**, 2653-2675 (1981).
- Moustafa, Y. A. in *Berichte aus dem Fachbereich Geowissenschaften der Universitaet Bremen* 102 (Fachbereich Geowissenschaften, Universitaet Bremen, Bremen, Federal Republic of Germany University of Bremen, Bremen, Federal Republic of Germany,, 2000).
- Moustafa, Y. A., Pätzold, J., Loya, Y. & Wefer, G. Mid-Holocene stable isotope record of corals from the northern Red Sea, International Journal of Earth Sciences **88**, 742-751 (2000).
- Nestor, H. Ordovician and Silurian reefs in the Baltic area. *Proceedings of the Second European regional meeting; Coral reefs in the past, present and future* **29**, 39-47 (1995).
- Nicholson, S. Recent rainfall fluctuations in Africa and their relationships to past conditions over the continent. *The Holocene* **4**, 121-131 (1994).
- Nozaki, Y., Rye, D. M., Turekian, K. K. & Dodge, R. E. A 200 year record of carbon-13 and carbon- 14 variations in a Bermuda coral. *J. Geophys. Res. Lett.* **5**, 825-828 (1978).
- O'Brien, S. R. et al. Complexity of Holocene climate as reconstructed from a Greenland ice core. *Science* **270**, 1962-1964 (1995).
- Opdyke, B. N. W., J. C. G. Pleistocene to Holocene CO (sub 2) fluctuations as a function of tropical shelf area; a return to the coral reef hypotheses. *AGU 1990 fall meeting* **71**, 1227 (1990/10/23).
- Ortlieb, L. The documentary historical record of El Niño events in Peru: An update of the Quinn record (sixteenth through nineteenth centuries), in El Niño and the Southern Oscillation: Multiscale Variability, Global and Regional Impacts, H.F. Diaz and V. Markgraf (editors) Cambridge University Press, in press. (1999).
- Otto-Bliesner, B. L. El Niño/La Niña and Sahel precipitation during the middle Holocene. . *J. Geophys. Res. Lett.* **26**, 87-90 (1999).
- P.K., S., White, K. S., Enfield, D., Dodge, R. E. & Milne, P. Stable oxygen isotopic composition of corals from the Gulf of Guinea as indicators of periods of extreme precipitation conditions in the sub-Saharan, J. . *Geophys. Res* **103**, 27,885-27, 892 (1998).
- Paetzold, J. Reconstruction of past North Atlantic climatic change from Bermuda corals. *Global change and marine geology; 85. Jahrestagung der Geologischen Vereinigung e.V.; Zusammenfassung der Tagungsbeitraege* **1-95**, 36 (1995).
- Parker, D. E., Jackson, M. & Horton, E. B. The GISST2.2 sea surface temperature and sea-ice climatology, Technical report, CRTN 63, Hadley Centre for Climate Prediction and Research, Meteorological Office, London Road, Bracknell, Berkshire, RG12 2SY. , 35 (1995).
- Pogue, T. W., A.; Pingitore, N. E., Jr. Precision electron microprobe analysis of the Sr/Ca temperature record in corals. *AGU 1994 fall meeting* **75**, 695 (1994/11/01).
- Quinn, T. T., F.; Crowley, T. A coral record from the tropical South Pacific. *AGU 1992 spring meeting* **73**, 150 (1992/04/07).
- Quinn, T. M. T., Frederick W.; Crowley, Thomas J. A 173 year stable isotope record from a tropical South Pacific coral. *Decadal to millennial-scale variability in the climate system* **12**, 407-418 (1993).
- Quinn, T. M. C., T. J.; Taylor, F. W. A mul%T century coral stable isotope record from New Caledonia. *AGU 1995 spring meeting* **76**, 323 (1995/11/07).
- Quinn, T. M. T., Frederick W.; Crowley, Thomas J.; Link, Suzanne M. Evaluation of sampling resolution in coral stable isotope records; a case study using records from New Caledonia and Tarawa. *Paleoceanography* **11**, 529-542 (1996/10).
- Quinn, T. M. C., Thomas J.; Taylor, Frederick W.; Henin, Christian; Joannot, Pascale; Join, Yvan. A

- multicentury stable isotope record from a New Caledonia coral; interannual and decadal sea surface temperature variability in the Southwest Pacific since 1657 A.D. *Paleoceanography* **13**, 412-426 (1998/08).
- Quinn, W. H., Neal, V. T. & Mayolo, S. E. A. d. El Niño occurrences over the past four and a half centuries. *J. Geophys. Res.* **92**, 14,449-14, 461 (1987).
- Quinn, T. M., Crowley, T. J. & Taylor, F. W. New stable isotope results from a 173-year coral from Espiritu Santo, Vanuatu. *J. Geophys. Res. Lett.* **23**, 3413-3416 (1996).
- Quinn, T. M. *et al.* A multi-century stable isotope record from a New Caledonia coral: Interannual and decadal sea-surface temperature variability in the southwest Pacific since 1657 AD. *Paleoceanography* **13**, 412-426 (1998).
- R.-H., Z., Rothstein, L. M. & Busalacchi, A. J. Origin of upper-ocean warming and El Niño change on decadal scales in the tropical Pacific Ocean. *Nature* **391**, 879-883 (1998).
- Rajagopalan, B., Lall, U. & Cane, M. A. Anomalous ENSO occurrences: an alternate view. *J. Climate* **10**, 2351-2357 (1997).
- Ramanathan, V. *et al.* Cloud-radiative forcing and climate: Results from the Earth Radiation Budget Experiment. *Science* **243**, 57-63 (1989,).
- Ramanathan, V. & Collins, V. A thermostat in the tropics? *Nature* **361**, 410-411 (1993).
- Ramsay, P. J. C., Anne L. Coral paleoclimatology research on the Southeast African Shelf. *Proceedings of the 8th international coral reef symposium* **8**, 1731-1734 (1997).
- Reeder, R. J. Interaction of divalent cobalt, zinc, cadmium, and barium with the calcite surface during layer growth. *Geochim. Cosmochim. Acta* **60**, 1543-1552 (1996).
- Rind, D. Latitudinal temperature gradients and climate change. *J. Geophys. Res.* **103**, 5943-5971 (1998).
- Rodbell, D. T. *et al.* A highresolution ~15,000-yr record of El Niño-driven alluviation in southwestern Ecuador. *Science* **283**, 516-520 (1999).
- Rohling, E. J. & Bigg, G. R. Paleosalinity and d18O: A critical assessment. *J. Geophys. Res.* **103**, 1307-1318. (1998).
- Rosenthal, Y. & Boyle, E. A. Factors controlling the fluoride content of planktonic foraminifera: An evaluation of its paleoceanographic applicability. *Geochim. Cosmochim. Acta* **57**, 335-345 (1993).
- Roulier, L. M. Seasonal- to decadal-climatic variability in Southwest Florida during the middle Pliocene warm interval; inferences from a coralline stable isotope record. , 47 (1994/08).
- Roulier, L. M. Q., Terrence M. Seasonal- to decadal-scale climatic variability in Southwest Florida during the middle Pliocene; inferences from a coralline stable isotope record. *Paleoceanography* **10**, 429-443 (1995/06).
- Sandweiss, D. H., Richardson, J. B., Reitz, E. J., Rollins, H. B. & Maasch, K. A. Geoarchaeological evidence from Peru for a 5000 years BP onset of El Niño. *Science* **273**, 1531-1533 (1996).
- Schellenberg, S. A. Middle Pleistocene oceanographic and environmental conditions in shallow-marine waters of the southwestern Colombian Basin; inferences from the stable-isotope record of a fossil coral. , 44 (1994/08).
- Schrag, D. P. M., M. D. Persistence of El Nino/Southern Oscillation in the Pleistocene; evidence from Indonesian fossil corals. *AGU 1995 spring meeting* **76**, 317 (1995/11/07).
- Schrag, D. P. Rapid analysis of high-precision Sr/Ca ratios in scleractinian corals and other marine carbonates. *Paleoceanography* **14**, 97-102 (1999).
- Schubert, C. The glaciers of the Sierra Nevada de Mérida (Venezuela): a photographic comparison of recent deglaciation. *Erdkunde* **46**, 58-64 (1992).
- Servain, J. Simple climatic indices for the tropical Atlantic and some applications, J. . *J. Geophys. Res.* **96**, 15,137-15, 146 (1991).
- Shen, G. T. L., Laura J.; Campbell, Todd M.; Cole, Julia E.; Fairbanks, Richard G. A chemical indicator of trade wind reversal in corals from the western tropical Pacific. *Journal of Geophysical Research, C, Oceans* **97**, 12,689-12,697 (1992/08/15).
- Shen, G. T. C., Julia E.; Lea, David W.; Linn, Laura J.; McConaughey, Edward A.; Fairbanks, Richard G. Surface ocean variability at Galapagos from 1936-1982; calibration of geochemical tracers in corals. *Paleoceanography* **7**, 563-588 (1992/10).
- Shen, C.-C. L., Typhoon; Chen, Chi-Yun; Wang, Chung-Ho; Dai, Chang-Feng; Li, Lung-An. The calibration of D(Sr/Ca) versus sea surface temperature relationship for Porites corals. *Geochimica et Cosmochimica Acta* **60**, 3849-3858 (1996/10).
- Shen, G. T. *et al.* Surface ocean variability at Galápagos from 1936-1982: Calibration of geochemical

- tracers in corals. *Paleoceanography*, 563-588 (1992).
- Shen, G. T. Rapid change in the tropical ocean and the use of corals as monitoring systems, in *Geoindicators: Assessing Rapid Environmental Changes in Earth Systems*, A.R. Berger and W.J. Iams (editors), Balkema Press, Rotterdam. , 155-169 (1996).
- Shukla, J. Interannual variability of monsoons, In: J.S. Fein and P.L. Stephens (editors), *Monsoons*, John Wiley, New York. , 399-464 (1987).
- Shulmeister, J. & Lees, B. G. Pollen evidence from tropical Australia for the onset of an ENSO dominated climate at c. 4000 BP. *The Holocene* **5**, 10-18 (1995).
- Simmons, A. J., Wallace, J. M. & Branstator, G. Barotropic wave propagation and instability, and atmospheric teleconnection patterns. *J. Atmos. Sci.* **40**, 1363-1392 (1983).
- Sirocko, F. et al. Century-scale events in monsoonal climate over the past 24,000 years. . *Nature* **364**, 322-324 (1993).
- Smith, J. E. R., Michael J. A new archive; the use of deep-water coral in paleo-climatic reconstructions. *Geological Society of America, 1993 annual meeting* **25**, 455 (1993/10).
- Smith, J. R., Michael J.; Schwarcz, Henry P.; McConaughey, Ted A. Rapid climate change in the North Atlantic during the Younger Dryas recorded by seep-sea corals. *Nature (London)* **386**, 818-820 (1997/04/24).
- Smith, N. E. Decadal climate variability in the western tropical Atlantic and the potential for proxy records from the coral Siderastrea siderea, unpublished Masters thesis, Univ. of Colorado. , 100 (1995).
- Stager, J. C. & Mayewski, P. A. Abrupt early to mid-Holocene climatic transition registered at the equator and the poles. *Science* **276**, 1834-1836 (1997).
- Stahle, D. W., Mushove, P. T., Cleaveland, M. K., Roig, F. & Haynes, G. A. Management implications of annual growth rings in Pterocarpus angolensis from Zimbabwe, *Forest Ecology and Management*, in press. (1999).
- Stoll, H. M. & Schrag, D. P. Effects of Quaternary sea level cycles on strontium in seawater. *Geochim. Cosmochim. Acta* **62**, 107-1118. (1998).
- Strasser, A. Pleistocene reefs in Sinai; eustatic and climatic controls. *Proceedings of the Second European regional meeting: Coral reefs in the past, present and future* **29**, 15-16 (1995).
- Swart, P. K. L., James J.; Hudson, Harold; Szmant, Alina. Climate variations in South Florida over the past 90 years as recorded in the stable oxygen isotopic composition of coral skeletons. *Geological Society of America, 1990 annual meeting* **22**, 172 (1990).
- Swart, P. K. L., J. J.; Kramer, P.; Fredrick, B.; Dodge, R. E.; Halley, R. Climate records in corals from the Florida Keys. *AGU 1992 spring meeting* **73**, 150 (1992/04/07).
- Swart, P. K. H., Genevieve F.; Dodge, Richard E.; Kramer, Philip ; Hudson, J. Harold; Halley, Robert B.; Robblee, Michael B. The stable oxygen and carbon isotopic record from a coral growing in Florida Bay: a 160 year record of climatic and anthropogenic influence. *Palaeogeography, Palaeoclimatology, Palaeoecology* **123**, 219-237 (1996/07).
- Swart, P. K. M., Michael; Charles, Chris; Boehm, Florian. Sclerosponges may hold new keys to marine paleoclimate . *Earth in Space* **11**, 10-14 (1999/02).
- Szabo, B. J. L., Kenneth R.; Muhs, Daniel R.; Simmons, Kathleen R. Thorium-230 ages of corals and duration of the last interglacial sea-level high stand on Oahu, Hawaii. *Science* **266**, 93-96 (1994/10/07).
- Terray, P. Space-time structure of interannual monsoon variability. *J. Climate* **8**, 2595-2619 (1995).
- Thompson, L. G., Mosley-Thompson, E. & Arnao, B. M. El Niño-Southern Oscillation events recorded in the stratigraphy of the tropical Quelccaya ice cap, Peru. *Science* **226**, 50-53 (1984).
- Thompson, L. G. & Mosley-Thompson, E. Reconstructing the history of interannual climate variability from tropical and subtropical ice-core records, in *El Niño: Historical and Paleoclimatic Aspects of the Southern Oscillation*, H.F. Diaz and V. Markgraf (editors), Cambridge University Press, Cambridge. , 295-322 (1992).
- Thompson, L. G. et al. Tropical climate instability: The last glacial cycle from a Qinghai-Tibetan ice core. *Science* **276**, 1821-1825 (1997).
- Thompson, L. G. et al. A 25,000-year tropical climate history from Bolivian ice cores. *Science* **282**, 1858-1864 (1998).
- Thompson, L. G., Henderson, K. A., Mosley-Thompson, E. & Lin, P.-N. The tropical ice core record of ENSO, in *El Niño and the Southern Oscillation: Multiscale Variability, Global and Regional Impacts*, H.F. Diaz and V. Markgraf (editors), Cambridge Univ. Press, in press. (1999).

- Toggweiler, J. R., Dixon, K. & Broecker, W. S. The Peru upwelling and the ventilation of the south Pacific thermocline. *J. Geophys. Res.* **96**, 20,467-20, 497 (1991).
- Toscano, M. A. L., Joyce; Hine, A. C.; Shinn, E. A. Late oxygen isotope Stage 5 reef system, Florida Keys shelf ridge; evidence for latest last interglacial sea-level fluctuations and paleoclimate. *Geological Society of America, 1994 annual meeting* **26**, 515 (1994).
- Toscano, M. A. L., Joyce; Hine, A. Age and paleoclimate of submerged late Pleistocene reef system, Southeast Florida shelf; implications for substage 5A sea level. *Geological Society of America, 1995 annual meeting* **27**, 448 (1995).
- Toscano, M. A. L., Joyce; Hine, A. Paleoclimate and sea level during oxygen isotope Substage 5A, Southeast Florida shelf edge. *Linked Earth systems; congress program and abstracts; Vol. 1*, 122-123 (1995).
- Trenberth, K. E. & Hurrell, J. W. Decadal atmosphere-ocean variations in the Pacific. *Clim. Dynamics* **9**, 303-319 (1994).
- Trenberth, K. & Hoar, T. The 1990-1995 El Niño-Southern Oscillation event: Longest on record. *J. Geophys. Res. Lett.* **23**, 57-60 (1996).
- Trenberth, K. E. et al. Progress during TOGA in understanding and modeling global teleconnections associated with tropical sea surface temperatures. *J. Geophys. Res.* **103**, 14,291-14, 324 (1998).
- Tribble, G. W. H., C. D., Jr. Banded corals as indicators of tropical Pacific paleoclimate. *Proceedings of the U.S. Geological Survey global change research forum, Herndon, Virginia, March 18-20, 1991*, 114 (1993).
- Tudhope, A. W. et al. Recent changes in climate in the far western equatorial Pacific and their relationship to the Southern Oscillation: oxygen isotope records from massive corals, Papua New Guinea. *Earth Planet. Sci. Lett.* **136**, 575-590 (1995).
- Tudhope, A. W. et al. Climatic records from massive Porites in Papua New Guinea: A comparison of skeletal Ba/Ca, skeletal $\delta^{18}\text{O}$ and coastal rainfall. *Proc. 8th Int. Coral Reef Symposium* **2**, 1,719-1, 724 (1997).
- Urban, F. E., Cole, J. E., Overpeck, J. T. & Kelleher, J. A new index of ENSO derived from multiple central Pacific corals, EOS: Trans. Am. . *Geophys. Union* **79**, F493 (1998).
- Urban, F. E., Cole, J. E. & Overpeck, J. T. Influence of mean climate on tropical Pacific variability from a 155-year coral record. (2000).
- Vernekar, A. D., Zhou, J. & Shukla, J. The effect of Eurasian snow cover on the Indian Monsoon. *J. Climate* **8**, 248-266 (1995).
- Vescei, A. M., Esmail. Reef degradation and evolution around the time of the Cretaceous/Tertiary boundary on a Tethyan carbonate platform (Montagna della Maiella, Italy). *Proceedings of the Second European regional meeting; Coral reefs in the past, present and future* **29**, 227 (1995).
- Waliser, D. E. & Graham, N. E. Convective cloud systems and Warm-Pool sea surface temperatures: Coupled interactions and self-regulation. *J. Geophys. Res.* **98**, 12,881-12, 893 (1993).
- Walker, G. T. Correlations in seasonal variations of weather, VIII, A preliminary study of world weather I. *Memoirs of India Meteorological Department* **24**, 75-131 (1923).
- Walker, G. T. Correlations in seasonal variations of weather, IX, A further study of world weather (world weather II). *Memoirs of India Meteorological Department* **24**, 275-332 (1924).
- Weber, J. N., White, E. W. & Weber, P. H. Correlation of density banding in reef coral skeletons with environmental parameters: the basis for interpretations of chronological records preserved in the coralla of corals. *Paleobiology* **1**, 137-149 (1975).
- Webster, P. J. & Yang, S. Monsoon and ENSO: selectively interactive systems. *Quart. J. Royal Met. Soc.* **118**, 877-926 (1992).
- Webster, P. J. et al. Monsoons: Processes, predictability, and the prospects for prediction. *J. Geophys. Res.* **103**, 14,451-14, 510 (1998).
- Webster, P. J., Loschnigg, J., Moore, A. & Reban, M. Evidence of prolonged coupled ocean-atmosphere instabilities in the Indian Ocean. *Nature, in press.* (1999).
- Wei, G., Sun, M., Li, X. & Nie, B. Mg/Ca, Sr/Ca and U/Ca ratios of a Porites coral from Sanya Bay, Hainan Island, South China Sea and their relationships to sea surface temperature. *Palaeogeography, Palaeoclimatology, Palaeoecology* **162**, 59-74 (2000).
- Weil, S. M., Buddemeier, R. W., Smith, S. V. & Kroopnick, P. M. The stable isotopic composition of coral skeletons: control by environmental variables. *Geochim. Cosmochim. Acta* **45**, 1147-1153 (1981).

- Wellington, G. M. G., Peter W.; Strong, Alan E.; Navarrete, A.; Wieters, Evie; Hubbard, Dennis. Crisis on coral reefs linked to climate change. *Eos, Transactions, American Geophysical Union* **82**, 1, 5 (2001/01/02).
- Wellington, G. M. & Glynn, P. W. Environmental influences on skeletal banding in eastern Pacific (Panamá) corals. *Corals Reefs* **1**, 2315-2322 (1983).
- Wells, L. M., M.; Fairbanks, R. Climate variability of the Indonesian Low and Southern Oscillation reconstructed from the geochemistry of annually banded reef corals. *Coral reefs and environmental change; the next 100 years; a synopsis and abstracts of papers presented at a symposium of the XVII Pacific science congress* **46**, 378 (199207).
- West, R. R. Carboniferous reef mounds; evolution, palaeolatitudinal and palaeoclimatic controls. *Carboniferous to Jurassic Pangea, first international symposium*, 335 (1993/08).
- Wilson, E. O. The current state of biological diversity. in Biodiversity, E.O. Wilson (editor), National Academy Press, Washington, D.C. , 3-18 (1986).
- Winter, A. G., Carlos. Carbon and oxygen isotope ratios in an 18 year old coral Montastrea annularis record. *AGU 1990 fall meeting* **71**, 1352 (1990/10/23).
- Winter, A., Goenaga, C. & Maul, G. A. Carbon and oxygen isotope time series from an 18-year Caribbean reef coral. *J. Geophys. Res.* **96**, 16,673-16,678 (1991).
- Woodhouse, C. A. & Overpeck, J. T. 2000 years of drought variability in the central United States. *Bull. Am. Met. Soc.* **79**, 2693-2714 (1998).
- Woodroffe, C. D. & Gagan, M. K. Coral microatolls from the central Pacific record late Holocene El Niño. *J. Geophys. Res. Lett.* **27**, 1511-1514 (2000).
- Xia, F. W. Z. H. L. Q. Z. S. W. X. T. A study of ami%N acid ages and biogeochemistry of Well NY-1 at Yongshu Jiao reef, southern South China Sea during the past 25,000 years. *29th international geological congress; abstracts* **29**, 389 (1992).
- Young, G. A. K., Stephen. The practical potential of growth banding in Paleozoic stromatoporoids and colonial corals. *Geological Society of America, 1998 annual meeting* **30**, 92 (1998).
- Zebiak, S. E. & Cane, M. A. A model El Niño/Southern Oscillation. *Mon. Wea. Rev.* **115**, 2262-2278 (1987).
- Zhang, J. & Crowley, T. J. Historical climate records in China and reconstruction of past climates. *J. Climate* **2**, 833-849 (1989).
- Zhang, Y., Wallace, J. M. & Battisti, D. S. ENSO-like decade-to-century scale variability, 1900-93. *J. Climate* **10**, 1004-20 (1997).